Connecticut Department of Energy and Environmental Protection

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Using the RPS Tool and Enhanced Watershed Protection and Restoration Efforts

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TMDL Group

NWQMC Tampa

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Integrated Water Resources Management

Water Data & Goals

Data

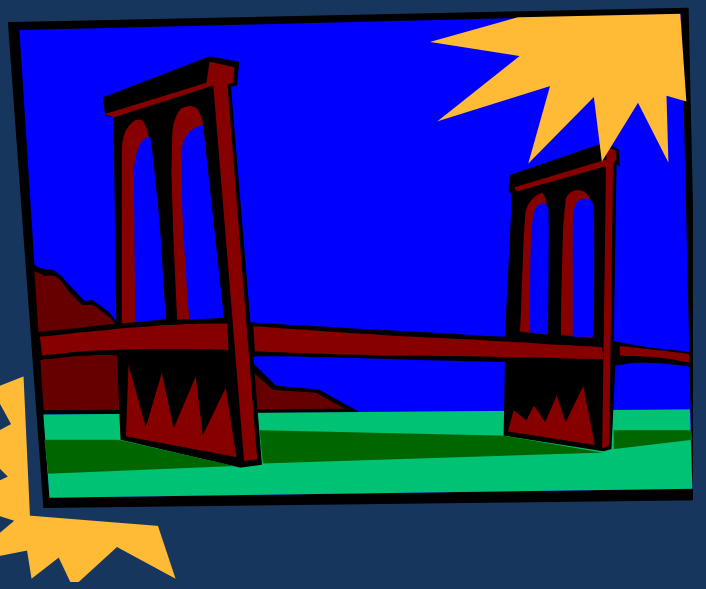
Criteria

Monitoring

Standards

Natural Resource Information

CWA Program: Bridging the Gap



Implementation

Remediation

Non-point Source

Permitting

Natural Resource Management

Establishing Plans and Actions to Restore and Protect Water Resources

New Approach

- New opportunity from EPA
- States select water quality focus
- More flexible approach
- Emphasis on results for restoration and protection
- Coordinate program efforts and increase returns

Improve collaboration and integration across all activities and programs to better realize water quality goals

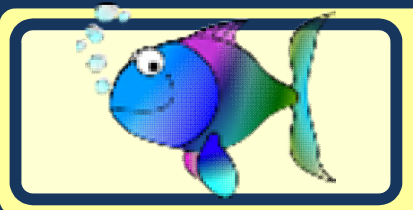
6 Key Elements of New Approach

Recovery Potential Screening (RPS)

EPA Tool to help States compare restorability across all watersheds

- Origins in Impaired Waters program
- Broader audiences now (fisheries, healthy watersheds)
- Systematic but very flexible approach
- Science-based, indicator-driven (GIS and field data sources)

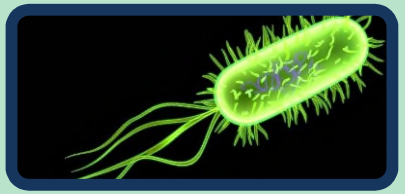
CT Water Quality Concerns



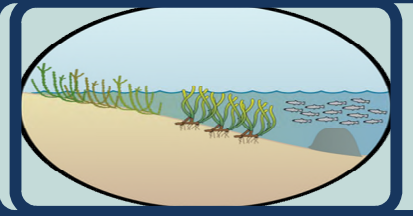
General Watershed Health

Stormwater

Nutrients

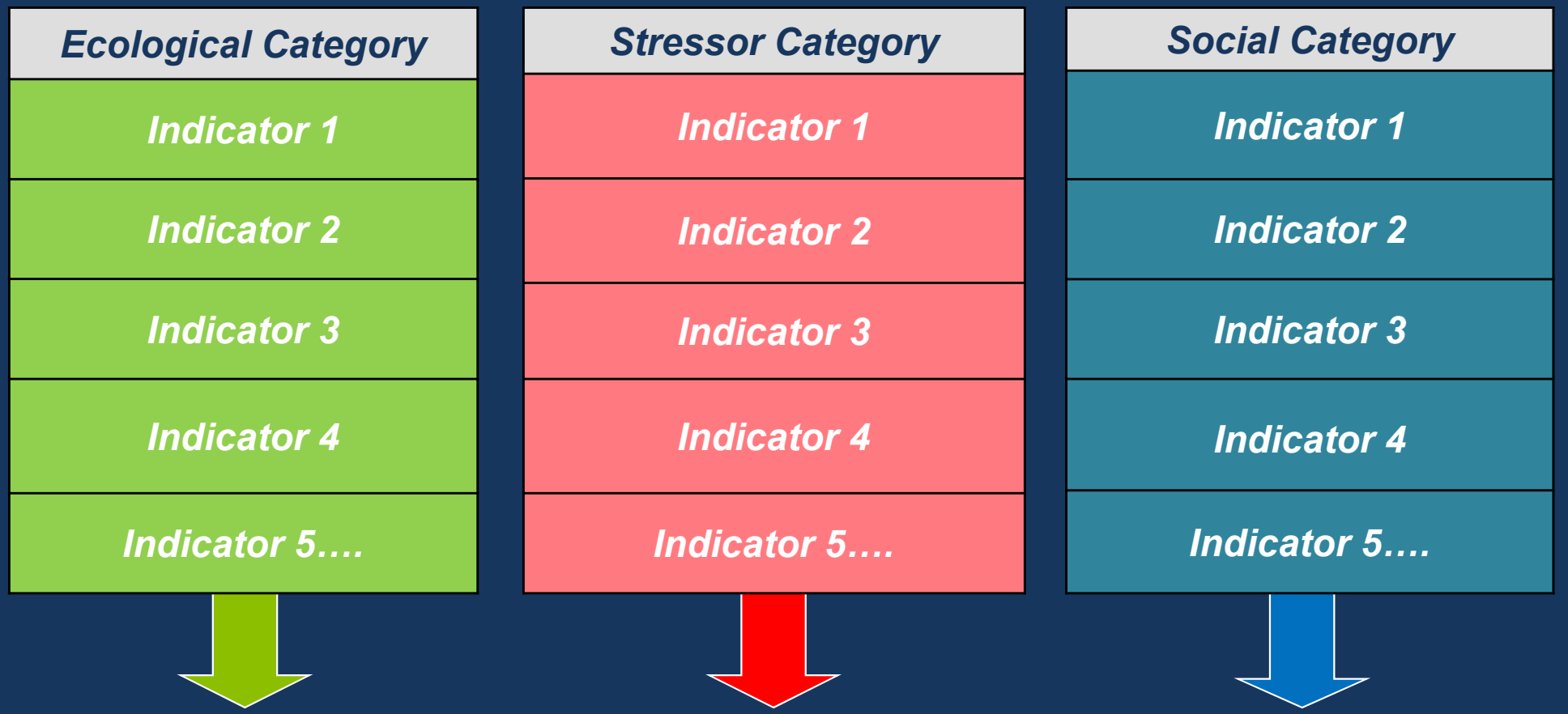


Bacteria



Saltwater Estuaries

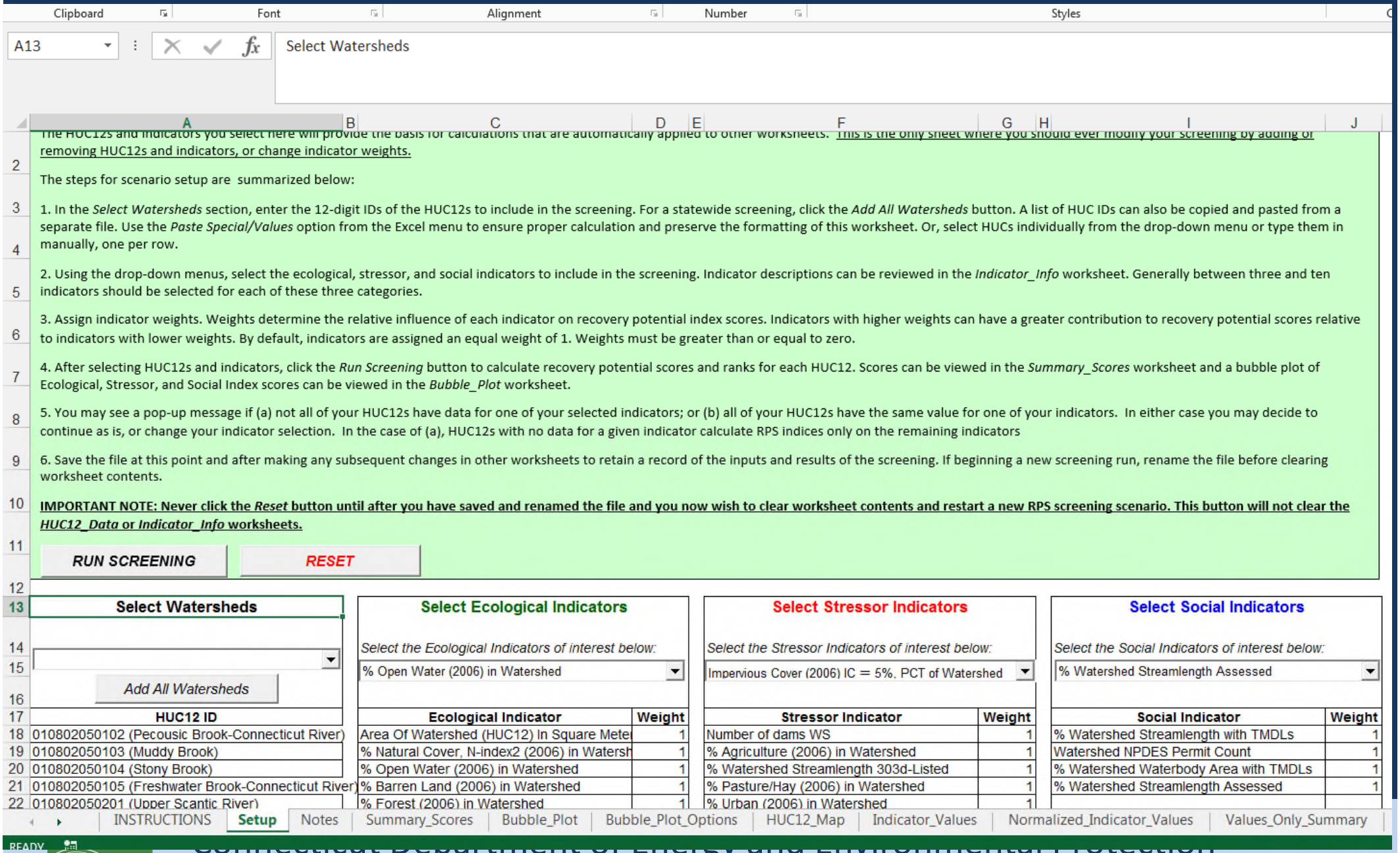
Recovery Potential Screening - Basic Concept



Ecological Index **Stressor Index** **Social Index**

$$\frac{\text{Ecological} + \text{Social} + (100 - \text{Stressor})}{3} = \text{RPI}$$

Setup Screen View



Clipboard | Font | Alignment | Number | Styles

A13 — Select Watersheds

The HUC12s and indicators you select here will provide the basis for calculations that are automatically applied to other worksheets. This is the only sheet where you should ever modify your screening by adding or removing HUC12s and indicators, or change indicator weights.

The steps for scenario setup are summarized below:

1. In the *Select Watersheds* section, enter the 12-digit IDs of the HUC12s to include in the screening. For a statewide screening, click the *Add All Watersheds* button. A list of HUC IDs can also be copied and pasted from a separate file. Use the *Paste Special/Values* option from the Excel menu to ensure proper calculation and preserve the formatting of this worksheet. Or, select HUCs individually from the drop-down menu or type them in manually, one per row.

2. Using the drop-down menus, select the ecological, stressor, and social indicators to include in the screening. Indicator descriptions can be reviewed in the *Indicator_Info* worksheet. Generally between three and ten indicators should be selected for each of these three categories.

3. Assign indicator weights. Weights determine the relative influence of each indicator on recovery potential index scores. Indicators with higher weights can have a greater contribution to recovery potential scores relative to indicators with lower weights. By default, indicators are assigned an equal weight of 1. Weights must be greater than or equal to zero.

4. After selecting HUC12s and indicators, click the *Run Screening* button to calculate recovery potential scores and ranks for each HUC12. Scores can be viewed in the *Summary_Scores* worksheet and a bubble plot of Ecological, Stressor, and Social Index scores can be viewed in the *Bubble_Plot* worksheet.

5. You may see a pop-up message if (a) not all of your HUC12s have data for one of your selected indicators; or (b) all of your HUC12s have the same value for one of your indicators. In either case you may decide to continue as is, or change your indicator selection. In the case of (a), HUC12s with no data for a given indicator calculate RPS indices only on the remaining indicators

6. Save the file at this point and after making any subsequent changes in other worksheets to retain a record of the inputs and results of the screening. If beginning a new screening run, rename the file before clearing worksheet contents.

IMPORTANT NOTE: Never click the *Reset* button until after you have saved and renamed the file and you now wish to clear worksheet contents and restart a new RPS screening scenario. This button will not clear the *HUC12_Data* or *Indicator_Info* worksheets.

RUN SCREENING | RESET

Select Watersheds

Add All Watersheds

HUC12 ID
010802050102 (Pecousic Brook-Connecticut River)
010802050103 (Muddy Brook)
010802050104 (Stony Brook)
010802050105 (Freshwater Brook-Connecticut River)
010802050201 (Upper Scantic River)

Select Ecological Indicators

Select the Ecological Indicators of interest below:

% Open Water (2006) in Watershed

Ecological Indicator	Weight
Area Of Watershed (HUC12) In Square Mete	1
% Natural Cover, N-index2 (2006) in Watersh	1
% Open Water (2006) in Watershed	1
% Barren Land (2006) in Watershed	1
% Forest (2006) in Watershed	1

Select Stressor Indicators

Select the Stressor Indicators of interest below:

Impervious Cover (2006) IC = 5%, PCT of Watershed

Stressor Indicator	Weight
Number of dams WS	1
% Agriculture (2006) in Watershed	1
% Watershed Streamlength 303d-Listed	1
% Pasture/Hay (2006) in Watershed	1
% Urban (2006) in Watershed	1

Select Social Indicators

Select the Social Indicators of interest below:

% Watershed Streamlength Assessed

Social Indicator	Weight
% Watershed Streamlength with TMDLs	1
Watershed NPDES Permit Count	1
% Watershed Waterbody Area with TMDLs	1
% Watershed Streamlength Assessed	1

INSTRUCTIONS | Setup | Notes | Summary_Scores | Bubble_Plot | Bubble_Plot_Options | HUC12_Map | Indicator_Values | Normalized_Indicator_Values | Values_Only_Summary

READY

Overview of Prioritization Tool

Enhance Prioritization Tool

- Acquire CT Specific Indicators
- Develop Indicators

Develop Scenarios for Tool

- Select Indicators & Weights
- Compare impacts of adjusting indicators

Extract results Further Analysis

- Sort and Filter Watersheds
- Rank and Select Common Watersheds

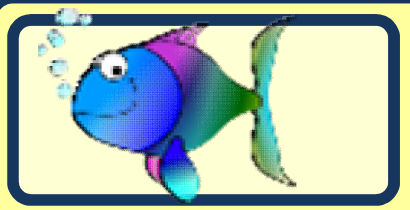
Publish DRAFT list of Watersheds for Comments

- Include priorities outside Tool results
- Engage Public with Complete DRAFT list

Example Indicators

Ecological Category	Stressor Category	Social Category
# dams with fishways CT	Number of road crossings	Stream miles of trout stocking CT
% of watershed as protected open space	% of agriculture land in the watershed	% watershed in a municipal stormwater permit area
Miles of free flowing stream CT	# of potential release remediation sites CT	# of known recreation areas CT
# of sampling stations with sensitive aquatic insects	% Impervious Cover >12% in a watershed	# impaired segments with TMDLs
% Natural Diversity Data Base areas CT	# of toxic discharge permits CT	% drinking water source area
	Phosphorus yield	% Environmental Justice Areas CT
	Nitrogen yield	

CT Water Quality Scenarios



General Watershed Health

- Restoration
- Protection

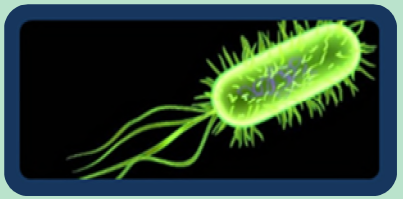
Stormwater

- Restoration
- Protection

Nutrients

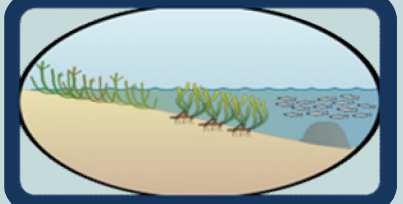
- Restoration
- Protection

SIX RPS TOOL SCENARIOS GENERATING SIX LISTS OF WATERSHEDS



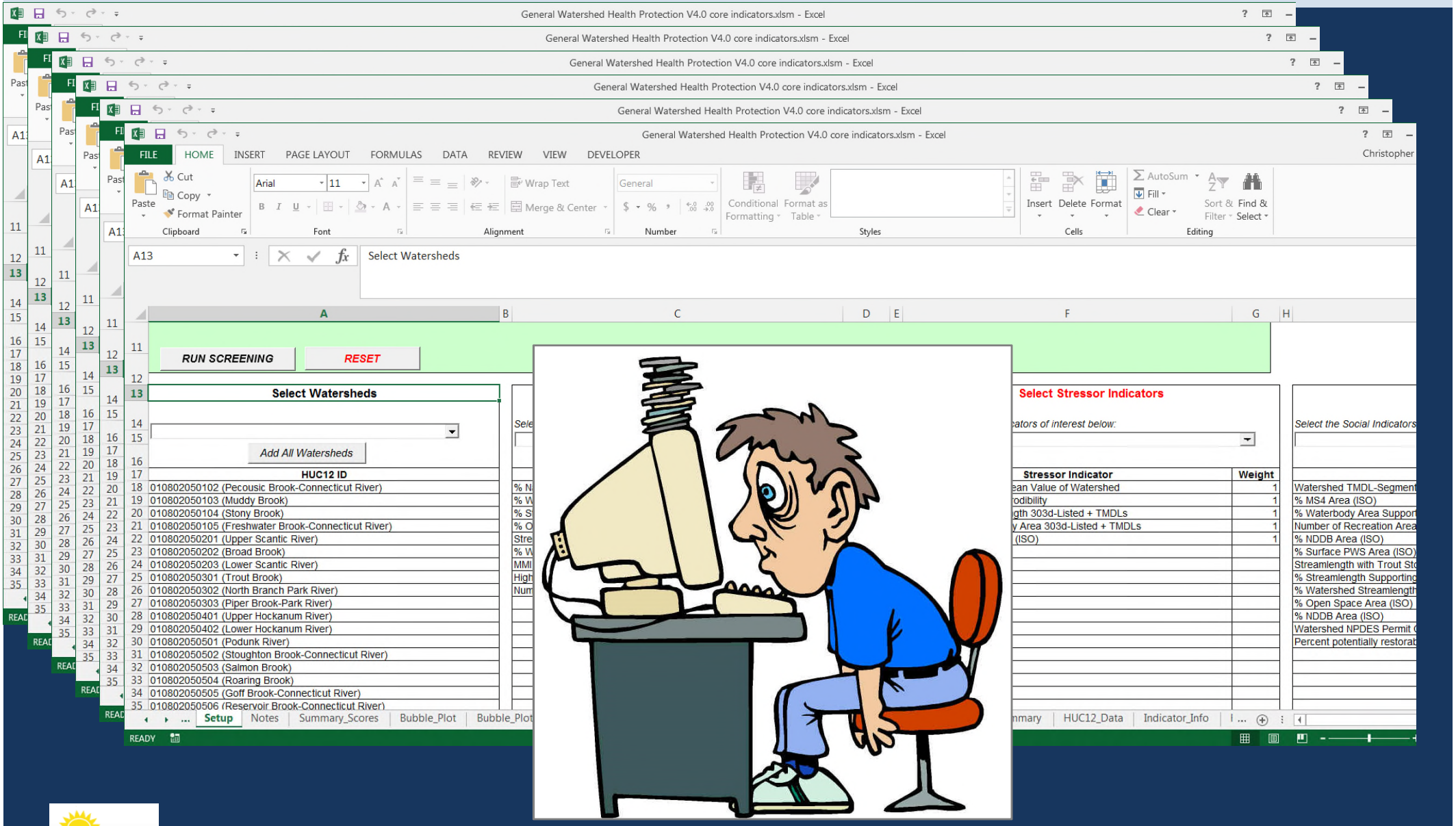
Bacteria Impairments Current and Future

(not tool based)



Estuaries and Embayments (not tool based)

Screening Runs



Connecticut Department of Energy and Environmental Protection

Output Rankings of RPS Tool

A7 | Watershed ID

AUTO-CALCULATED DATA - DO NOT ENTER DATA OR MAKE EDITS IN THIS WORKSHEET!

This worksheet contains each watershed's auto-calculated index values and rank orders for the Ecological, Stressor, Social, and Recovery Potential Integrated (RPI) index scores.

Ecological, Stressor, and Social Index values have a maximum value of 100. They are each calculated by summing weight-adjusted, normalized indicator values, dividing by the total weight, and multiplying by 100 Index + Social Index + (100 - Stressor Index)] / 3.

Among the index values, a higher score implies higher recovery potential in the case of the ecological, social, and RPI indices. A higher stressor index score implies lower recovery potential. In the case of rank or that a smaller number implies higher recovery potential.

Raw indicator values specific to the current RPS screening run can be viewed in the *Indicator_Values* worksheet. Refer to the *Normalized_Indicator_Values* worksheet for weight-adjusted, normalized indicator va values are derived. The *Bubble_Plot* worksheet contains an auto-generated graphical display based on the ecological, stressor and social index scores from this screening run.

Watershed ID	Watershed Name	Ecological Index	Ecological Rank	Stressor Index	Stressor Rank	Social Index	Social Rank	RPI Score	RPI Rank
010802050102	Pecousic Brook-Connecticut River	7.75	182	26.97	144	14.79	140	21.83	174
010802050103	Muddy Brook	14.73	167	22.03	130	18.86	71	37.19	150
010802050104	Stony Brook	18.35	152	34.26	160	24.58	17	36.22	155
010802050105	Freshwater Brook-Connecticut River	11.55	176	31.41	155	22.44	33	34.19	164
010802050201	Upper Scantic River	22.70	121	10.39	61	17.37	92	43.23	96
010802050202	Broad Brook	16.88	160	31.84	157	23.69	21	36.24	154
010802050203	Lower Scantic River	27.70	78	24.87	137	31.48	3	44.77	60
010802050301	Trout Brook	14.55	169	50.13	178	21.28	44	28.57	179
010802050302	North Branch Park River	17.48	156	46.46	177	27.98	7	33.00	168
010802050303	Piper Brook-Park River	8.50	181	59.01	183	24.41	19	24.63	183
010802050401	Upper Hockanum River	19.03	151	30.71	152	21.27	46	36.53	152
010802050402	Lower Hockanum River	27.63	79	45.36	176	30.75	6	37.67	148
010802050501	Podunk River	11.33	177	39.65	169	23.14	25	31.61	175
010802050502	Stoughton Brook-Connecticut River	10.58	178	34.51	163	26.73	10	34.27	163
010802050503	Salmon Brook	14.68	168	24.28	133	22.96	29	37.78	147
010802050504	Roaring Brook	35.08	29	8.74	41	20.67	52	49.00	20
010802050505	Goff Brook-Connecticut River	8.53	180	35.87	164	24.45	18	32.37	171
010802050506	Reservoir Brook-Connecticut River	27.30	81	17.39	116	20.53	53	43.48	89
010802050601	Upper Mattabesset River	23.50	114	39.94	170	23.44	22	35.67	159
010802050602	Coginchaug River	30.35	57	26.38	142	23.32	23	42.43	104
010802050603	Lower Mattabesset River	19.60	146	38.72	168	21.13	50	34.00	166
010802050701	Higganum Creek	29.15	66	6.39	6	14.17	153	45.64	47
010802050702	Mill Creek-Connecticut River	24.93	100	17.55	117	15.97	117	41.12	122
010802050801	Blackledge River	29.88	61	11.06	67	18.95	68	45.92	45
010802050802	Jeremy River	25.95	92	11.43	70	16.69	103	43.74	77
010802050803	Pine Brook	24.35	107	14.01	102	14.68	142	41.67	114

Summary_Scores | Bubble_Plot | Bubble_Plot_Options | HUC12_Map | Indicator_Values | Normalized_Indicator_Values | Values_Only_Summary | HUC12_Data | Indicato

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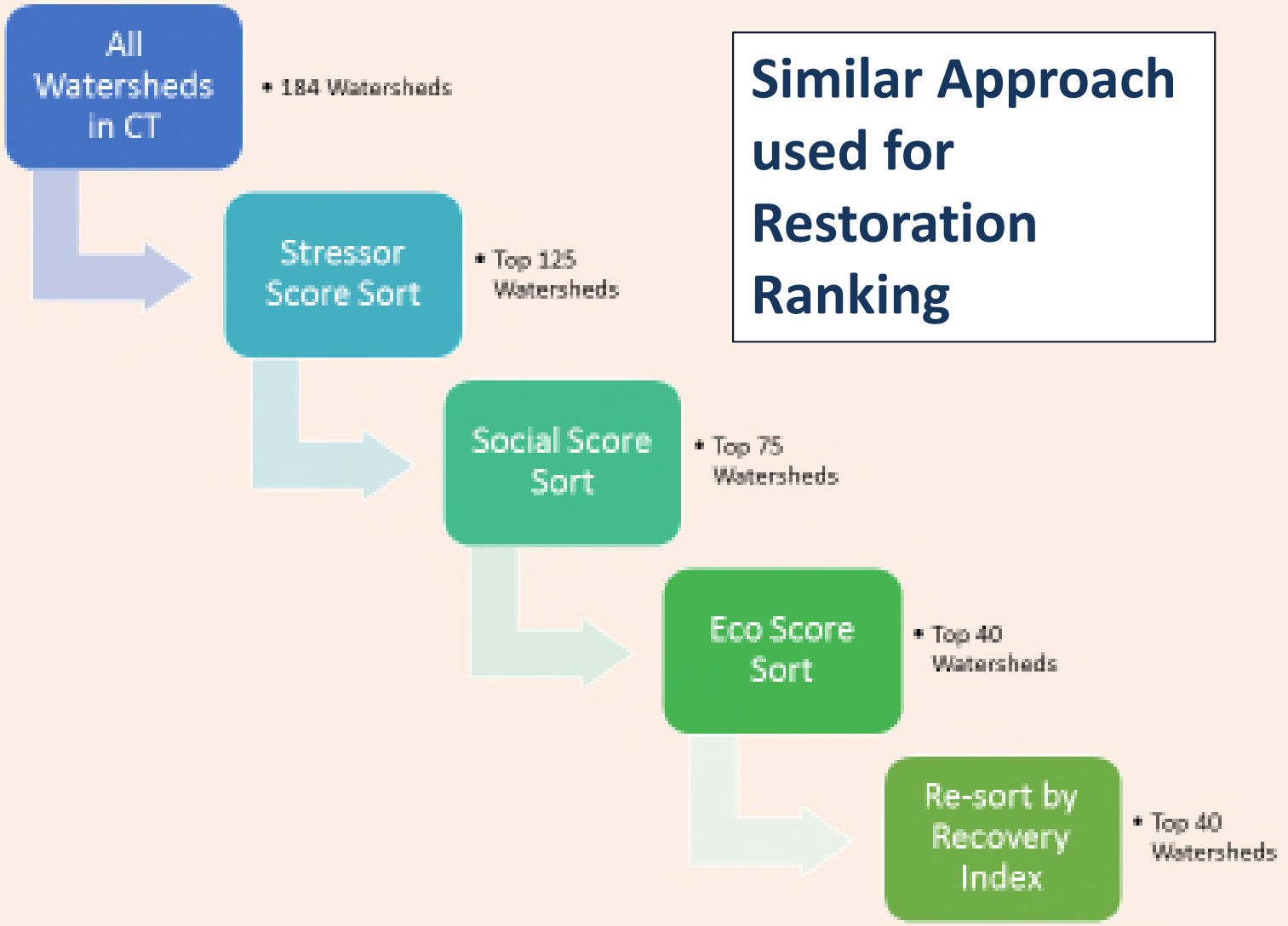
Screening Results Analysis

Method of Using Protection Rankings from Recovery Potential Screening Tool



Similar Approach used for Restoration Ranking

Sorting RPS Tool Protection Results

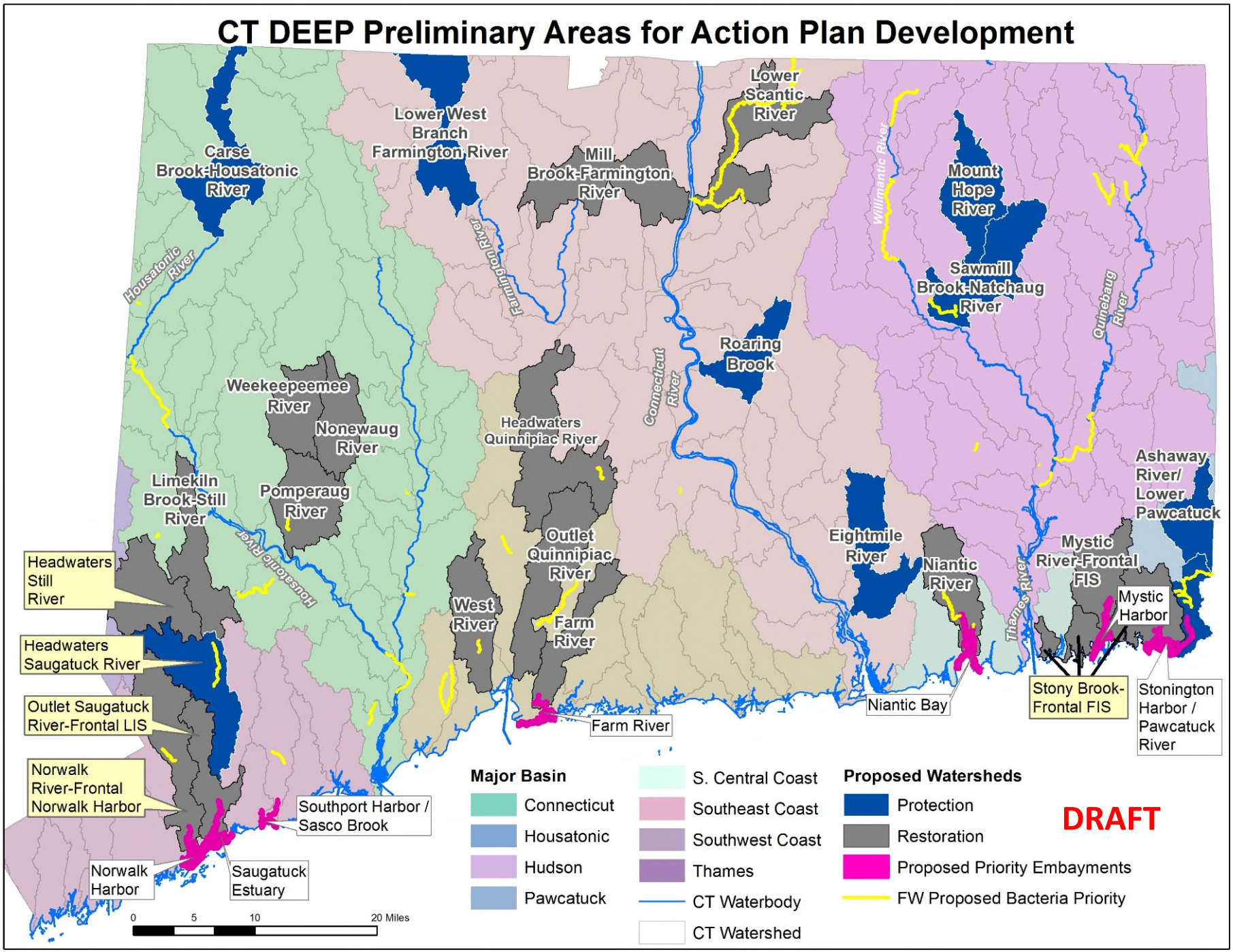
Stormwater Top 20 Watersheds	Nutrient Top 20 Watersheds	General Watershed Health Top 20 Watersheds
Watershed A Watershed B Watershed C	Watershed A Watershed B	Watershed B Watershed C

Only Watershed B added to Priority List

Additional Evaluation

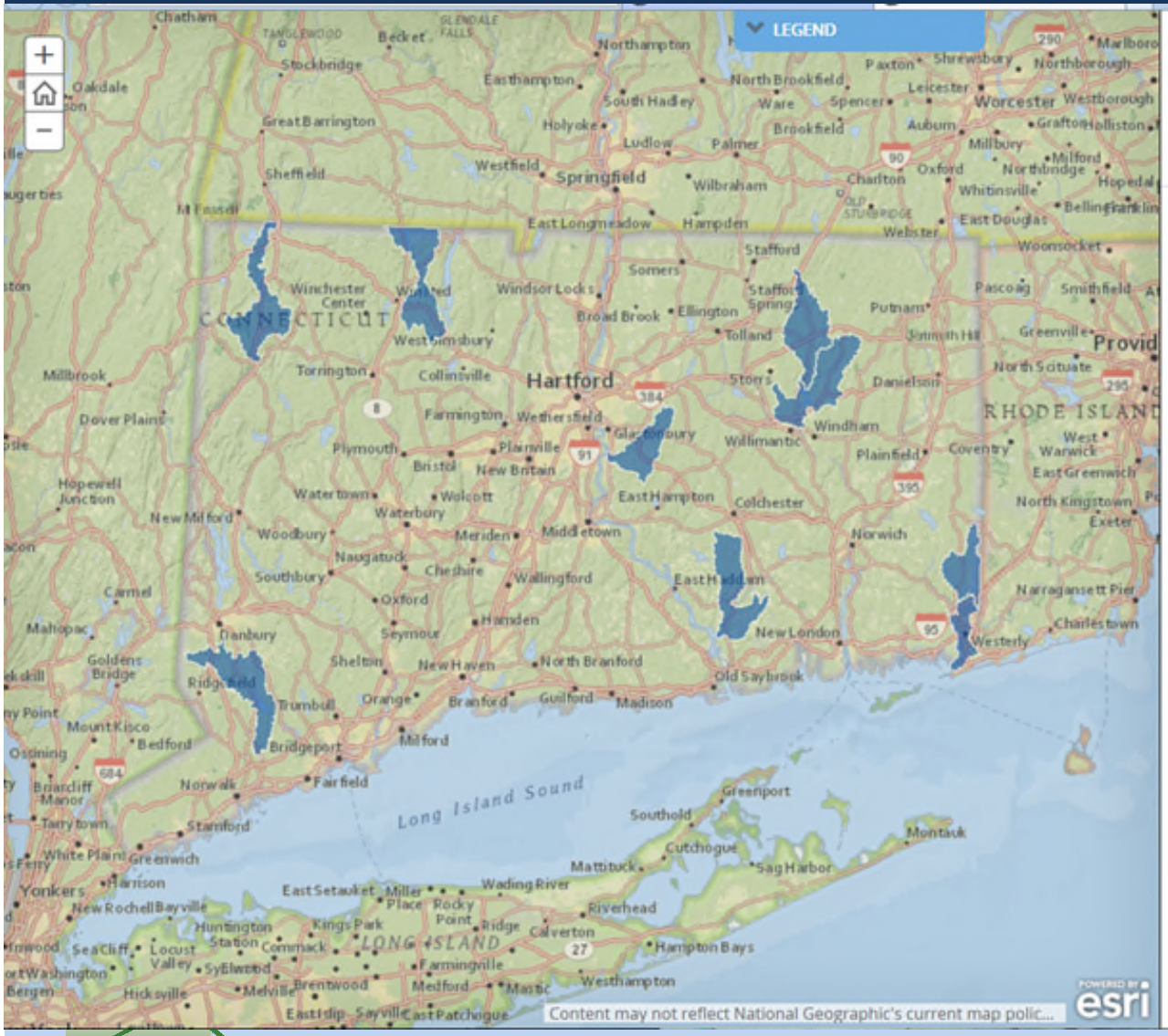
- Partners
- Refined Data
- Existing Monitoring Data
- Other Scenarios

Preliminary Focus Watersheds



Enhanced Public Outreach

- Online GIS Interactive Web "Storyboard"



Edit

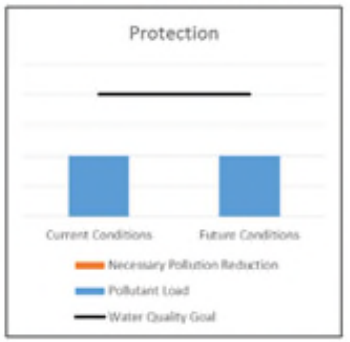
Connecticut's Enhanced Watershed Protection and Restoration Strategy

No issues detected × Story not shared ×

Protect What's Good: Watersheds Selected for Protection

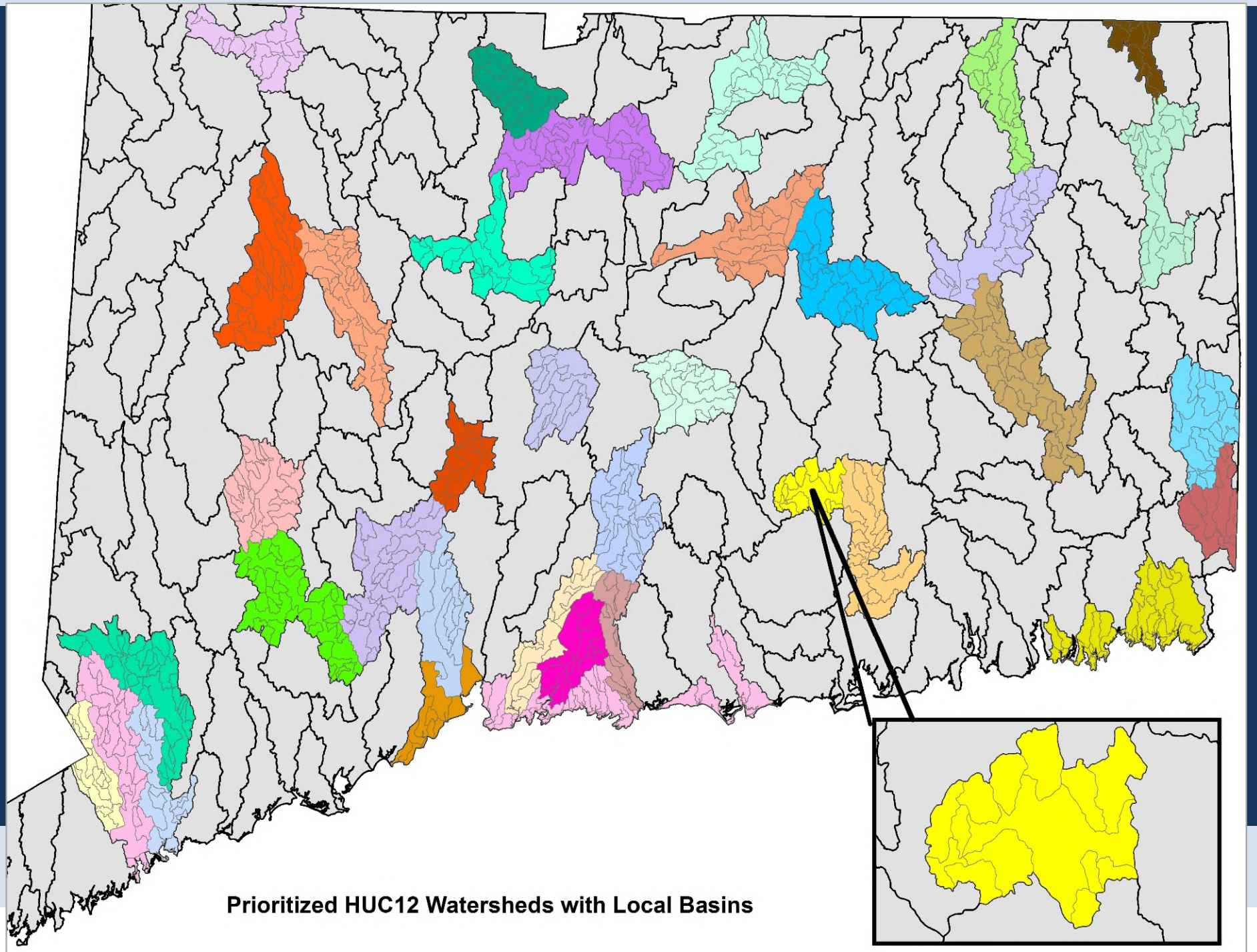
This draft list of Connecticut watersheds focuses on areas that currently have healthy water quality and natural resources. The objective for these areas is to maintain and protect the higher water quality that is currently found in the watershed. This group of watersheds tend to feature low development conditions and low impervious cover percentages.

Why Establish Plans for Connecticut's Waterbodies?



Zoom in to view examples of social /ecological indicators and watersheds selected for protection.

Enhanced Watershed Analysis



Next Steps

- Engage the public
- Respond to public comments on List
- Revise List for submittal to EPA

Questions?

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